

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Patent Application of:	) Group Art Unit: <b>1745</b>
	)
<b>Yukio Miyaki, et al.</b>	) Examiner: <b>Eugenia Wang</b>
	)
Application No. <b>10/821,368</b>	)
	)
Filed: <b>April 9, 2004</b>	)
	)
For: <b>BATTERY</b>	)
	)

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Commissioner for Patents  
P.O. Box 1450  
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**APPELLANT'S MAIN BRIEF ON APPEAL**

Dear Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits this Main Brief on Appeal pursuant to the Notice of Appeal filed October 1, 2010 in the above-identified application.

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**I. REAL PARTY IN INTEREST:**

The real party in interest in the present appeal is the Assignee, Sony Corporation. The assignment was recorded in the U.S. Patent and Trademark Office at Reel 015563, Frame 0904.

**II. RELATED APPEALS AND INTERFERENCES:**

Appellant is not aware of any related appeals or interferences.

### **III. STATUS OF CLAIMS:**

Claims 1, 3 and 4 are pending and under consideration in the above-identified application. Claims 2 and 5 were cancelled previously.

The present appeal is directed to claims 1, 3 and 4 which were finally rejected in an Office Action dated June 1, 2010.

A copy of claims 1, 3 and 4 is appended hereto as the Claims Appendix.

The status of the claims on appeal is as follows:

Claims 1, 3 and 4 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto et al. (EP 0704921 A1) in view of Ikeda et al. (WO 01/29918; U.S. Patent No. 7,241,533 serving as English translation). Appellant respectfully traverses this rejection.

**IV. STATUS OF AMENDMENTS:**

In the Advisory Action, the Examiner indicated that the previous amendment to the claims in the response to the June 1, 2010 Final Office Action would be entered on appeal. Therefore, there are no pending claim amendments.

**V. SUMMARY OF CLAIMED SUBJECT MATTER:**

The claimed invention relates to a negative electrode that includes a current collector having a first principal plane and a second principal plane, where the roughness of the first principal plane and the second principal plane is mutually different.

**Independent Claim 1**

Claim 1 requires a spirally wound body including a spirally wound laminate of a cathode and an anode with an electrolyte in between. Specification, page 6, lines 18-22. The anode includes an anode current collector having a plurality of layers, including an inner current collector layer and an outer current collector layer. Specification, page 8, lines 14-23. Additionally, the claims require outer anode active material layer disposed on an outer winding surface of the outer current collector layer of the anode current collector, and an inner anode active material layer disposed on an inner winding surface of the inner current collector layer of the anode current collector. *Id.*

The outer anode active material layer and the inner anode active material layer both include an amorphous compound or a microcrystalline compound of silicon or tin having a particle diameter in the range of 0.1  $\mu\text{m}$  to 35  $\mu\text{m}$ . Specification, page 9, line 18- page 10, line 20; page 12, lines 9-11. Additionally, claim 1 requires that the capacity ratio between the outer anode active material layer and the inner anode active material layer in at least one region is within a range of 0.6 to 0.8 inclusive. Specification, page 13, line 17 - page 14, line 23. Further, the sectional surface of the spirally wound body has one of an elliptical shape and a shape including a straight line and a curved line, and a ratio of a longest diameter to a shortest diameter of the sectional surface of the spirally wound body with respect to the center of the spirally wound body is within a range of 1 to 3 inclusive. *Id.* at page 14, lines 1-16.

Claims 3 and 4 depend on claim 1.

Claim 3 depends on claim 1 and further requires that the outer anode active material layer and the inner anode active material layer are alloyed with the anode current collector in at least a portion of an interface with the anode current collector. Specification, page 11, line 14 - page 12 line 3.

Claim 4 depends on claim 1 and further requires that the outer anode active material layer and the inner anode active material layer are formed on the anode current collector through at least one method selected from a group consisting of a vapor-phase deposition method, a liquid-phase deposition method and a sintering method. Specification, page 11, line 22- page 12, line 3.



**VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL:**

Whether claims 1, 3 and 4 are obvious over Fujimoto et al. (EP 0704921 A1) in view of Ikeda et al. (WO 01/29918; U.S. Patent No. 7,241,533 serving as English translation).

## **VII. ARGUMENT:**

As set forth below, the rejections of the claims under Section 103(a) are improper for at least two reasons, (1) that Fujimoto does not teach or suggest the claimed ratio and (2) that the claimed capacity ratio is not obvious.

### **No Construction of Fujimoto et al. (EP 0704921 A1) in view of Ikeda et al. (WO 01/29918; U.S. Patent No. 7,241,533) Renders Any of Claims 1, 3 and 4**

#### **Obvious.**

A. Fujimoto does not teach or suggest the claimed ratio.

The Examiner's arguments on why the ratios required by the claims would be considered known result-effective variables are mere speculation and conjecture, which the Board of Patent Appeals and Interferences (the "Board") has held "cannot form the basis for concluding obviousness." *Ex Parte Belau*, Appeal No. 2009-006786 at 6, (B.P.A.I. May 18, 2010).

In *Ex Parte Belau*, the Board considered the patentability of an application where all of the features of an independent claim were disclosed by the prior art, except for the ratio between two sensor values. *Ex Parte Belau*, at 5. In *Ex Parte Belau*, the Examiner argued that the sensor ratio was a result effective variable, which was obvious over the prior art. *Id.* The Board, however, disagreed. *Id.* Specifically, the Board stated that the cited references failed to disclose any relationship between the sensors, much less a specific ratio as required by the claims. *Id.* at 5-6. Moreover, the Board stated that "the Examiner has not provided any evidence to establish that the changes in the ratio of the...[sensors] were known to change the ability of automated manufacturing equipment to detect or register an absorbent article during manufacturing." *Id.* at 6.

For the same reasons, the Examiner is wrong in the present application. Specifically, the Examiner maintains that the argument that the electrode material mixture that is 60 to 97% of the electrode mixture on the outer side of the collector, or the coating thickness is the same as the capacity ratio required by the claims. However, a coating thickness, which is the smallest distance of length, width and thickness or the measurement from one surface to its opposite is not the same as the capacity ratio, defined in the specification as the capacity ratio per  $\text{cm}^2$  for the inner anode active material layer and the outer anode active material layer. Specification, page 28 & <http://www.merriam-webster.com> definition of thickness and thick. Similar to *Ex Parte Belau*, the Examiner fails to point to any ratio, relationship or specific teaching in Fujimoto that shows otherwise. Moreover, factors such as the density of the active material and grain diameters can impact capacity. Specification, pages 12 and 14. Thus, the thickness of the electrode mixture on the inner and outer side of the collector is not the same as an overall capacity ratio as required by the claims.

B. The claimed capacity ratio is not obvious.

In addition, the capacity ratio required by the claims is not obvious over the thickness range taught by Fujimoto. Prima facie obvious is established when the only difference between a claimed invention and the prior art is the required range or variable. *Titanium Metals Corp. v. Banner*, 778 F.2d 775 (Fed. Cir. 1985).

Here, Fujimoto teaches a coating thickness, whereas the claims require a capacity ratio. As discussed above, the coating thickness and capacity ratio measure different values. As such, the difference between Fujimoto and the claimed invention is twofold, the measured value and the required range. Accordingly, prima facie obviousness is not established because the difference between the prior art and the claimed invention is more than just a range or variable.

As such, taken either singularly or in combination with each other, the above cited references fail to teach or even fairly suggest all the requirements of the claims. Thus, claims 1 and 3-10 are patentable over the cited references. Accordingly, Appellant respectfully requests the above rejection be withdrawn.

**VIII. CONCLUSION:**

For the foregoing reasons, Appellants respectfully submit that the rejections posed by the Examiner are improper as a matter of law and fact. Accordingly, Appellants respectfully request the Board reverse the rejections of claims 1, 3 and 4.

Respectfully submitted,

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## **CLAIMS APPENDIX**

1. (Previously Presented) A battery, comprising:

a spirally wound body including a spirally wound laminate of a cathode and an anode with an electrolyte in between,

wherein,

the anode includes (a) an anode current collector having a plurality of layers, including an inner current collector layer and an outer current collector layer, (b) an outer anode active material layer disposed on an outer winding surface of the outer current collector layer of the anode current collector, and (c) an inner anode active material layer disposed on an inner winding surface of the inner current collector layer of the anode current collector,

the outer anode active material layer and the inner anode active material layer both include an amorphous compound or a microcrystalline compound of silicon or tin having a particle diameter in the range of 0.1  $\mu\text{m}$  to 35  $\mu\text{m}$ ,

a capacity ratio between the outer anode active material layer and the inner anode active material layer in at least one region is within a range of 0.6 to 0.8 inclusive, and

a sectional surface of the spirally wound body has one of an elliptical shape and a shape including a straight line and a curved line, and a ratio of a longest diameter to a shortest diameter of the sectional surface of the spirally wound body with respect to the center of the spirally wound body is within a range of 1 to 3 inclusive.

2. (Cancelled)

3. (Original) A battery according to claim 1, wherein the outer anode active material layer and the inner anode active material layer are alloyed with the anode current collector in at least a portion of an interface with the anode current collector.
4. (Previously Presented) A battery according to claim 1, wherein the outer anode active material layer and the inner anode active material layer are formed on the anode current collector through at least one method selected from a group consisting of a vapor-phase deposition method, a liquid-phase deposition method and a sintering method.
5. (Cancelled)

**EVIDENCE APPENDIX**

Appellants do not submit extraneous evidence with this Main Brief on Appeal.



**RELATED PROCEEDINGS APPENDIX**

Appellant does not submit any information on related proceedings in this Main Brief on Appeal as Appellant is unaware of any related appeals or interferences.